

NEW GENERA AND SPECIES OF RHYPAROCHROMINAE FROM
WEST AFRICA (HEMIPTERA; LYGAEIDAE) DESCRIBED IN
HONOR OF J. C. M. CARVALHO

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Abstract.—*Carvalhodrymus* n.g.; *Carvalhodrymus elegans*, *Mizaldus lestoni*, *M. linnavoorii*, *M. carvalhoi*, *M. tenuis*, *Fontathanus rostratus*, *F. ghanaensis*, *Paromius carvalhoi* and *Esinerus humidus* n. spp. are described as new from West Africa. A key is given for the African species of *Mizaldus*. Modifications of a key to African Drymini genera and a discussion of zoogeographic relationships of West African Lygaeidae is included.

Key Words: Lygaeidae, West Africa, Drymini, Myodochini, zoogeography

It is a special pleasure and honor to dedicate this paper to Dr. José C. M. Carvalho, my good friend and colleague for half a century, in recognition of his many contributions to our knowledge of the world fauna of Heteroptera and especially that of the tropics.

The present paper has been made possible by the field work and careful study of several of Dr. Carvalho's friends and colleagues. Without the material that they have brought together, the great West African fauna would still be very poorly understood. In the present paper I have acknowledged my debt to some of these people by the establishment of patronymics for them.

The West African rhyparochromine fauna is an especially important one for several reasons. Not only is it very rich in species (a great many still undescribed), but it shows a number of close relationships to the Oriental fauna, particularly of the forest-living forms. This strongly suggests (as it does in other animal groups) a former closer connection faunistically and floristically between West Africa and East Asia.

The richness of the West African fauna is

not only due to isolation within the region but also, presumably, for two additional reasons. First, the occurrence of a savanna corridor of long duration separating the West African forest fauna from that of Central Africa. Second, the distinction between the fauna of the wet tropical forest, both coastal and montane, from the increasingly arid savanna and desert areas to the north. The savanna fauna is for the most part composed of species with wide ranges, many occurring in a broad arc around the rain forest, often all the way from Senegal to South Africa (see *Mizaldus nidulus* discussion below).

There is also a southern Palearctic element that reaches the savanna in West Africa. When one, in addition, considers the frequent disjunction of the montane and lowland forests, the reasons for the richness and frequent endemism of parts of the fauna becomes evident.

Students of West Africa have become increasingly interested in possible West African-South American relationships since the acceptance of continental drift. Such relationships are not evident in the rhyparo-

chromine fauna, at least, at the present state of our knowledge. For example, the tribes Drymini and Rhyparochromini, which are dominant elements in West Africa, are completely absent in South America and in the Lethaeini and Antillocorini, where such sister groups may exist, our knowledge is totally inadequate to demonstrate any close African-South American relationships.

All measurements are in millimeters.

Carvalhodrymus, NEW GENUS

Body elongate, slender, parallel sided. Eyes set near middle of head, remote from anterior pronotal margin. Ocelli placed far behind posterior margins of eyes. Tylus acuminate, extending only over basal one-fifth of first antennal segment. Vertex convex. Pronotum with a well-defined anterior collar; lateral pronotal margins very narrowly explanate, deeply incised at level of complete and deep transverse impression; humeral angles evenly rounded; posterior margin shallowly concave. Anterior pronotal lobe convex, slightly higher than posterior lobe. Scutellum not elevated throughout but with a raised Y-shaped carina. Clavus with three rows of punctures, but punctures of inner row smaller and less closely spaced than those of outer two rows. Lateral corial margins straight, not expanded posteriorly. Apical corial margin straight. Metathoracic scent gland auricle short, bent caudad. Evaporative area small, occupying only area immediately around auricle with dorsal margin rounded. Fore femora slender, armed below with a single small, inconspicuous spine near distal end. Body non-pruinose, glabrous or nearly so. Pronotal punctures on anterior and posterior pronotal lobes equal in size and distribution. Antennae extremely elongate, very slender, filiform, fourth segment not at all fusiform.

Type species.—*Carvalhodrymus elegans* new species. By monotypy.

Carvalhodrymus will run to couplet 14 in Slater's (1993) key to African genera of Drymini, but it is not closely related to either

genus at that couplet. It is much more similar to the Palearctic genus *Thaumastopus* Fieber. Both of these genera are relatively elongate slender taxa with acuminate heads, elongated first antennal segments, coarsely punctate pronota, very narrowly explanate pronotal margins, eyes set well away from the anterior margin of the pronotum, a Y-shaped scutellar carina, and elongate filiform antennae.

Carvalhodrymus differs from *Thaumastopus* in lacking incrassate, multispinose fore femora, possessing straight rather than convex lateral corial margins, having compound eyes that are elliptical rather than round in dorsal view, by having greatly elongated antennae with both segments two and three much longer than the pronotal length (subequal in *Thaumastopus*). In the type species of *Thaumastopus* (*marginicollis* Lucas), the tylus nearly attains the middle of the relatively short first antennal segment that is shorter than or subequal to the pronotal length (see Kiritschenko's (1951) excellent figure No. 340), whereas in *Carvalhodrymus* the tylus attains only the proximal $\frac{1}{2}$ of the first antennal segment that is appreciably longer than the length of the pronotum.

It is a great pleasure to name this striking new genus in honor of Dr. J. C. M. Carvalho.

Carvalhodrymus elegans, NEW SPECIES (Fig. 1)

Coloration uniformly yellowish-brown with strongly contrasting dark brown punctures on pronotum, scutellum and hemelytra. Membrane of forewing dark fumose, lacking a pale apical macula. Corium with a narrow, elongate, smooth, pale patch adjacent to radial vein at level of apex of scutellum. Hemelytra anterior to this macula slightly paler than corium distally (coloration difference marked by a straight transverse line). Legs and antennae uniformly pale yellow.

Length head 1.06 (distance anterior to eye

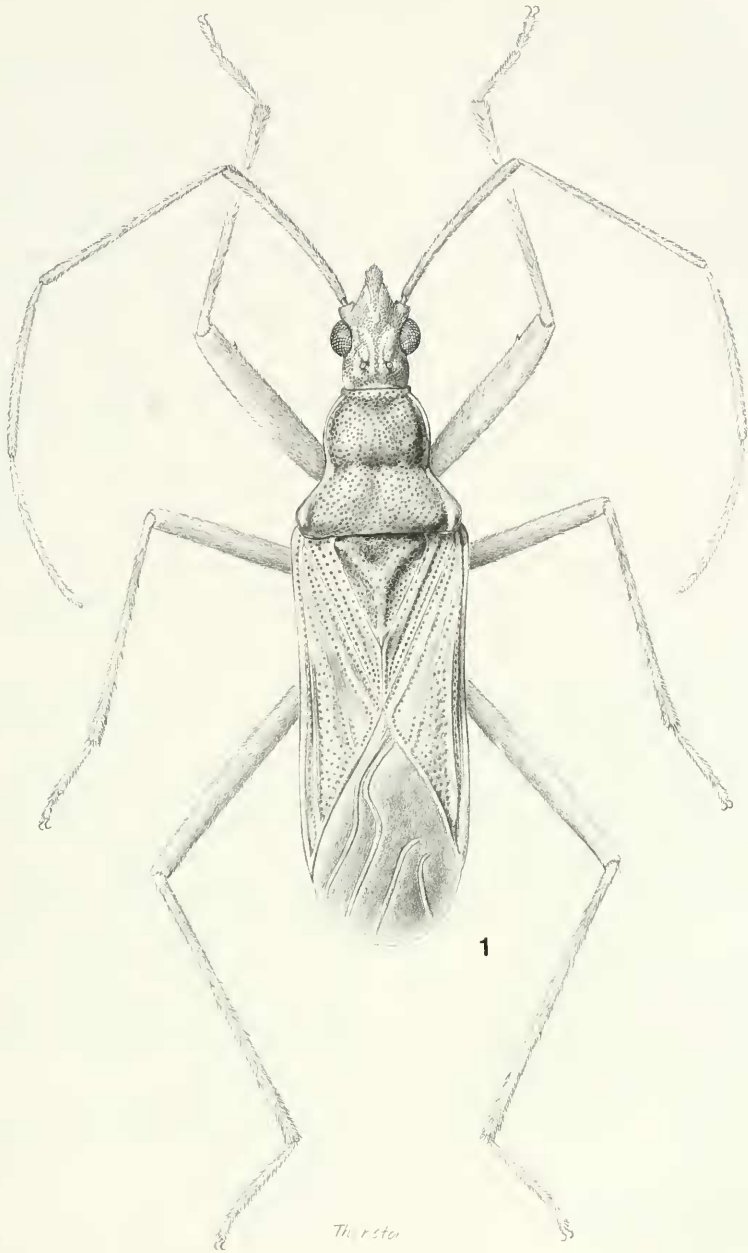


Fig. 1. *Carvalhodrymus elegans* n. sp. Dorsal view.

0.46, distance posterior to eye 0.28), width head 0.76, interocular space 0.40. Length pronotum 1.20 (length anterior lobe 0.66, posterior lobe 0.54), width pronotum 1.46. Length scutellum 1.00, width 0.80. Length

claval commissure 0.54. Midline distance apex clavus-apex corium 1.30. Midline distance apex corium-apex abdomen 0.60. Length labial segments I 0.66, II 0.80, III 0.46, IV 0.28 (approx.). Length antennal

segments I. 1.60, II 1.76, III 1.44, IV 1.36 (approx). Total body length 5.60.

Holotype. — ♂: *Ghana*: Sunjami. 12.XII.1965 (Leston) (UV trap). In American Museum of Natural History.

Paratype. — 1 ♂: *Cameroon*: Southwest Prov. 25 km. W. Limbe Bakingili. 16.VII.1984 (James Digiulio) (Malaise trap). In Carnegie Museum of Natural History.

The paratype, while apparently not differing structurally from the holotype, is very differently colored. The ground color is dark chocolate brown. The pale macula on the hemelytra near the lateral margin at the level of the apex of the scutellum (which is only faintly differentiated in the holotype) is a sharply contrasting white in the paratype and the entire corium anterior to this macula is much paler than the posterior area. The paratype has a small white area on the membrane adjacent to the apex of the corium. The third antennal segment is dark chocolate brown and contrasts strikingly from the pale yellow first and second segments and the almost white fourth segment. The fore femora are dark red-brown. Despite these striking color differences the holotype does not appear to be teneral and there seem to be no significant structural differences.

This apparently is a rare species, or at least comes very rarely to lights, as in the many thousands of West African Rhyparochrominae that I have examined these are the only two specimens known.

Mizaldus Distant

Distant 1901: 483.

Mizaldus is a genus of small drymine lygaeids characterized by the deeply concave apical corial margins, elevated scutellum, lack of fore femoral spines, two rows of claval punctures, short head with large eyes and filiform antennae.

Only two species previously have been known to occur in Africa, *Mizaldus nidulus* Slater and Carayon from Guinea in West

Africa and *Mizaldus sinuaticollis* Linnavuori from the southern Sudan in East Africa.

Specimens are rare in collections. Apparently, species of this genus live in specialized habitats and come only rarely to lights.

In the present paper four new species are described and additional distributional data are given for previously described species.

Characters that appear to be most useful in separating the various species are the shape of the scutellum, the nature of the scutellar punctures, the relative thickness of the antennae and, in some cases, the coloration of these segments, the size and shape of the eyes, and the pronotal proportions. While there appear to be differences in the pruinosity patterns on the pronotum, a more adequate series will be necessary before the utility of this suite of characters can be determined.

Scudder (1968) established the genus *Neomizaldus* with *Mizaldus lewisi* Distant as the type species. His lengthy generic description consists almost entirely of features that are true of both taxa. Scudder notes that the abdominal sterna of species of *Neomizaldus* are longitudinally striate. This condition is found in all of the African species of *Mizaldus* (although obscured by long hairs in *Mizaldus tenuis*). Scudder's chief differentiating character was said to be the presence of a distinct collar in *Neomizaldus*. He notes that this collar is not "really evident" mid-dorsally, but is distinct laterally. I am very dubious of the desirability of recognizing *Neomizaldus* as a distinct genus. The collar is very poorly developed in the type species of Scudder's genus, only slightly more so than in some of the African species of *Mizaldus*. On the other hand, *Neomizaldus lewisi* has a very distinctive scutellum with a broad subbasal transverse smooth raised area that is not found in any *Mizaldus* known to me. However, given the striking differences in the conformation of the scutellum in some of the African species of *Mizaldus*, this seems questionable as a generic feature. Clearly an investigation of

the Oriental elements of these two taxa is in order.

The only published information on the biology, of which I am aware, is that of Slater and Carayon (1963) who reported *M. nidulus* from the nests of ploceid finches in Guinea, where they occurred with anthorcorids and were apparently feeding on small arthropods. This species was reared on Coleoptera larvae in the laboratory. Such a feeding habit may not be true of other species of the genus. *Mizaldus nidulus* is relatively weakly sclerotized as compared with the new species described below and the hemelytral punctures, especially those on the clavus, are pale and little differentiated in color from the surrounding surface. By contrast, the other West African species have hemelytral punctures that are distinctly differentiated. This suggests that possibly *M. nidulus*, being associated with cryptic habitats (bird nests), has lost some of its sclerotization, whereas the other species may be living in less protected environments.

Distribution.—While previously known on the continent only from West and East Africa the genus will probably be found to be widespread throughout much of tropical and subtropical Africa. As noted below *M. nidulus* is now known to occur in Nigeria and both on the high veld and in the tropical corridor in South Africa. The unpublished field notes from Ghana of the late Dennis Leston indicate that specimens upon which several of the new species are based were taken in dense forest by pyrethrum knock-down technique, whereas *M. nidulus* is probably a savanna species. This belief is consistent with the discovery of the latter in South Africa. Such a distribution, as noted previously, suggests a range through a wide savanna arc from West to South Africa around the central African rain forest.

Mizaldus lestoni, NEW SPECIES

(Figs. 4, 5)

Body relatively elongate, tapering anteriorly. Head, pronotum, scutellum, large

apical corial macula, basal $\frac{3}{4}$ of first antennal segment and femora black. Hemelytra white, central area hyaline. A small, narrow, elongate, dark-brown vitta present on distal $\frac{1}{2}$ to $\frac{1}{3}$ of radial vein. Membrane pale translucent basally, contrastingly fumose from level of dark corial macula to apex. Hemelytral punctures dark brown, strongly contrasting with pale ground color. Base and distal end of first antennal segment and all of segments two and three pale yellow (segment four missing). Pleural and sternal surfaces nearly uniformly dark chocolate brown, with posterior lobe of metapleuron white. Tibiae and tarsi yellowish brown, tibiae somewhat darker proximally. Head shining. Pronotum and scutellum nearly completely dull pruinose, obscurely and finely punctate. Head and anterior pronotal lobe clothed with numerous decumbent silvery hairs.

Head sharply acuminate, not declivent. Tylus extending to middle of first antennal segment; vertex strongly convex; eyes sessile, occupying most of lateral head surface but not strongly globose. Ocelli placed much nearer eyes than meson. Length head 0.60, width 0.65, interocular space 0.40. Pronotum with lateral margins narrowly but distinctly carinate, strongly sinuate; transverse impression complete; posterior margin straight before base of scutellum, laterally lobately produced. Length pronotum 0.78, width 1.08. Scutellum evenly elevated, lacking a median carina, punctures distinctly separated from one another. Length scutellum 0.58, width 0.53. Length claval commissure 0.13. Lateral corial margins strongly sinuate. Midline distance apex clavus-apex corium 0.70. Midline distance apex corium-apex abdomen 0.88. Length labial segments I 0.38, II 0.40, III 0.43, IV 0.33. Antennae relatively robust, chiefly terete but with second and third segments slightly enlarged from proximal to distal ends. Length antennal segments I 0.30, II 0.62, III 0.50 (IV missing). Total body length 3.60.

Holotype.—♀: Ghana: Eastern Region, Atewa Range Forest Reserve. 25.VII.1969

(D. Leston) (pyrethrum knockdown). In American Museum of Natural History.

This is a relatively large species, generally similar to *Mizaldus linnavuorii* but with a completely differently shaped scutellum that in this species has small inconspicuous punctures. The antennal segments are much thicker, the eyes less protrudent and more elongate and the femora are completely dark on all legs.

The Atewa Range Forest Reserve is mature primary forest, the upper story with a largely complete canopy.

This species is dedicated to the memory of the late Mr. Dennis Leston for his invaluable West African collections and for his important contributions to our knowledge of the world Hemiptera.

Mizaldus linnavuorii, NEW SPECIES

(Fig. 2)

Body robust. Head, pronotum, scutellum, narrow apex of corium and third and fourth antennal segments black. First antennal segment infuscated with red-brown on basal half. Corium and clavus white, or very pale yellow, lacking a transparent central area. Fore femora and distal 1/2 of middle and hind femora red-brown; remainder of legs and antennae pale yellow. Upper 1/2 of posterior metapleural lobe white. Head shining. Pronotum and scutellum completely pruinose. Head and pronotum finely and evenly punctate. Scutellar punctures large, coarse and anastomosing. Membrane hyaline, unicolorous. Body almost completely glabrous above.

Head acuminate, tylus reaching to distal 1/3 of first antennal segment. Eyes large, globose, protruding. Length head 0.56, width 0.64, interocular space 0.36. Pronotum relatively broad, posterior lobe elevated above anterior; lateral margins very narrowly carinate, sinuate; transverse impression complete. Length pronotum 0.84 (length anterior lobe 0.36, length posterior lobe 0.48), width 1.12. Scutellum with a sharp ovate marginal carina, the margins meeting posteriorly in an arc on meson. Scutellar disc

convex basally and mesally, somewhat depressed distally, with a very weak carina near distal end. Length scutellum 0.56, width 0.60. Lateral corial margins relatively shallowly concave. Length claval commissure 0.14. Midline distance apex clavus-apex corium 0.72. Midline distance apex corium-apex abdomen 0.62. Labium extending posteriorly well between mesocoxae. Length labial segments I 0.36, II 0.36, III 0.36, IV 0.30. Antennae elongate, very slender, fourth segment at most narrowly fusiform. Length antennal segments I 0.28, II 0.62, III 0.60, IV 0.54. Total body length 3.12.

Holotype.—♂: *Ivory Coast*: Mt. Tonkoui. 15–22.X.1973 (Linnavuori). In American Museum of Natural History.

Paratype.—1 ♀: *Ivory Coast*: Adiopodoume. 29.IX–7.X.1973 (Linnavuori). In J. A. Slater collection.

This species is readily recognizable by its large size, robust body form, elongate slender antennae with the third and fourth segments black, and especially by the coarsely punctate, elevated and uniquely carinately margined scutellum.

The paratype differs from the holotype in having the posterior pronotal lobe and the scutellum somewhat subshining rather than being completely dull pruinose.

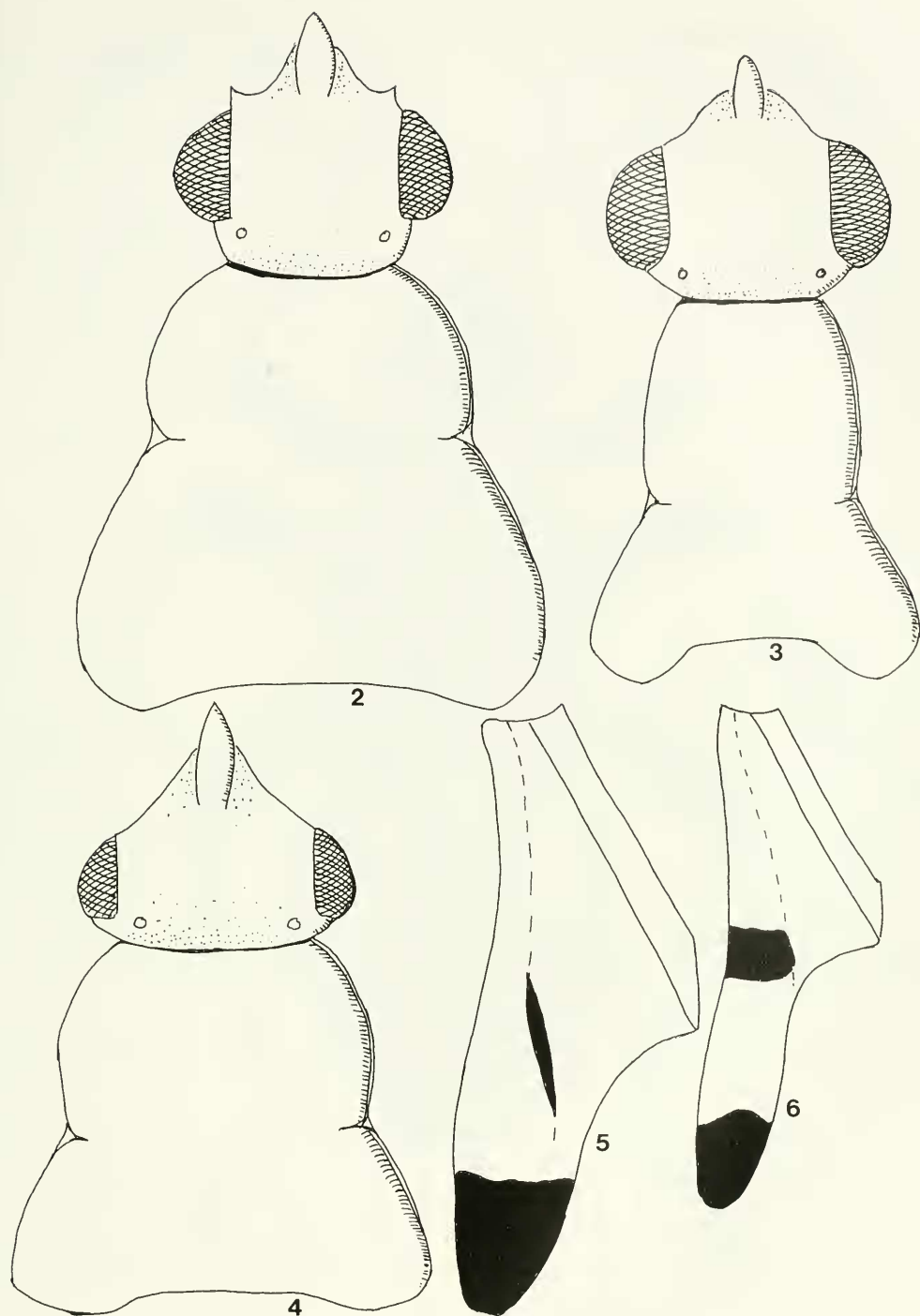
Mizaldus linnavuorii appears to be most closely related to *Mizaldus carvalhoi* as discussed under the latter.

It is a pleasure to dedicate this species to Dr. Rauno Linnavuori in recognition of his unparalleled West African collections and his many contributions to our knowledge of African Hemiptera.

Mizaldus carvalhoi, NEW SPECIES

(Fig. 7)

Body robust. Head, anterior pronotal lobe, apical corial macula and fourth antennal segment black. Posterior pronotal lobe red-brown. Clavus and corium white, latter with central area subhyaline. Membrane uniformly translucent hyaline. Fore femora and distal half of middle and hind femora red-brown. Basal half of antennal segment one



Figs. 2-6. 2. *Mizaldus linnavuori* n. sp. Dorsal view of head and pronotum. 3. *Mizaldus tenuis* n. sp. Dorsal view of head and pronotum. 4. *Mizaldus lestoni* n. sp. Dorsal view of head and pronotum. 5. *Mizaldus lestoni* n. sp. Dorsal view clavus and corium. 6. *Mizaldus tenuis* n. sp. Dorsal view clavus and corium.

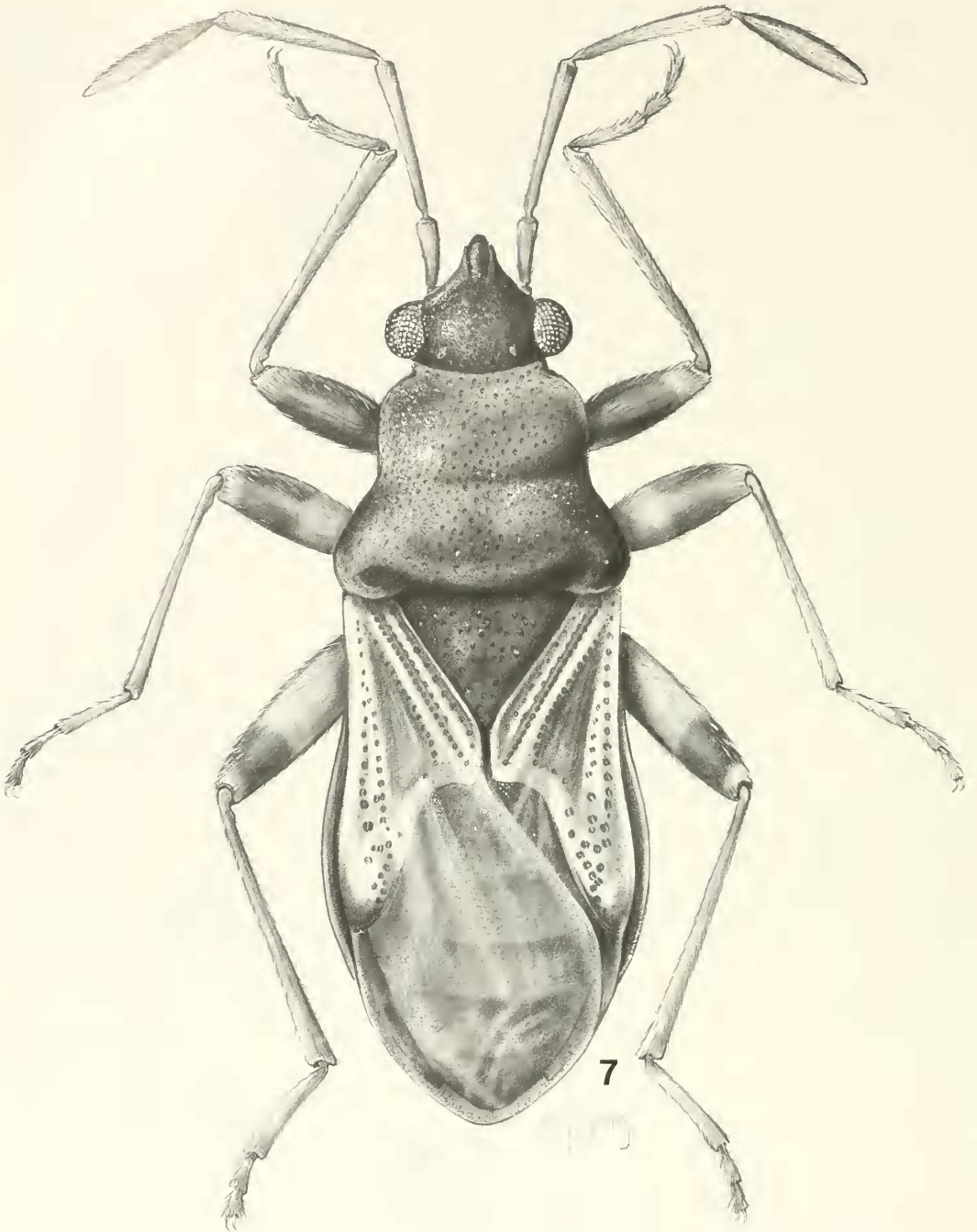


Fig. 7. *Mizaldus carvalhoi* n. sp. Dorsal view.

and suffused proximal half of antennal segment 3 pale yellowish brown. Remainder of legs and antennae pale yellow. Upper portion of posterior metapleural lobe white. Head shining. Pronotal calli, posterior pronotal lobe (with exception of a large quadrate pruinose area on either side of midline immediately behind transverse impression) and scutellum dull to subshining, but contrasting with pruinosity of anterior pronotal lobe. Head, pronotum, and scutellum with distinct well-separated punctures, those on scutellum not anastomosing. Dorsal surface almost glabrous, no elongate hairs present.

Head broad, sub-acuminate; eyes globose, protruding; vertex only slightly convex. Length head 0.50, width 0.60, interocular space 0.34. Pronotum broad, posterior lobe slightly elevated above anterior; lateral margins narrowly carinate, sinuate; transverse impression complete, but relatively shallow. Length pronotum 0.74 (length anterior lobe 0.36, length posterior lobe 0.38), width 0.98. Scutellum with lateral margins carinate, tapering posteriorly to a V-shaped apex; an obtuse median carina present; basal half of surface somewhat elevated. Length scutellum 0.43, width 0.46. Lateral corial margins shallowly concave. Length claval commissure 0.14. Midline distance apex clavus-apex corium 0.68. Midline distance apex corium-apex abdomen 0.62. Labium reaching between mesocoxae. (Approximate labial lengths from paratype I 0.35, II 0.38, III 0.35, IV 0.22.) Antennae slender, filiform, third segment very slightly clavate, fourth segment narrowly fusiform. Length antennal segments I 0.30, II 0.54, III 0.50, IV 0.46. Total body length 2.52.

Holotype.—♂: *Ghana*: Nsemre Forest Reserve, Brog Ahafo 13.XII.1965 (D. Leston). In American Museum of Natural History.

Paratypes.—*Ghana*: 2 ♀♀ same data as holotype. 1 ♂ Tafo, Eastern Region 23.V.1966 (D. Leston) (pyrethrum knock-

down block, R1 cocoa). In J. A. Slater collection.

This species is closely related to *Mizaldus linnavuorii*. The type series is considerably smaller with a differently shaped scutellum in which the punctures are small and discrete, rather than coarse and anastomosing, and the marginal scutellar carina does not meet in a semi-circular curve near the posterior end of the scutellum. The fourth antennal segment is also relatively longer (subequal in length to segment three rather than being appreciably shorter). The pruinosity patterns of the two species and the pale third antennal segment of the present species all appear to be distinctive features.

I have examined an additional female from *Nigeria*: (SE. St. Obudu Cattle Ranch 16–18.VIII.1973 (Linnavuori), which I believe to be conspecific although it is considerably larger. Because this species and *M. linnavuorii* are more closely related to one another than most of the other species of *Mizaldus* described here, the measurements of this Nigerian specimen are given to facilitate relationships when more extensive material becomes available. Length head 0.58, width 0.72, interocular space 0.38. Length pronotum 0.90 (length anterior lobe 0.44, posterior lobe 0.46), width 1.18. Length scutellum 0.52, width 0.64. Length claval commissure 0.16. Midline distance apex clavus-apex corium 0.70. Midline distance apex corium-apex abdomen 0.80. Length antennal segments I 0.34, II 0.64, III 0.58, IV 0.60. Total body length 3.40.

Mizaldus tenuis, NEW SPECIES

(Figs. 3, 6)

Body relatively elongate, nearly parallel sided. Head, pronotum, scutellum, a large apical corial macula and pleural and ventral surfaces uniformly black. A brown quadrate macula present on corium at level of posterior end of claval commissure extending inward from lateral margin to raised radial

vein (Fig. 6). Antennal segments one, two, and three pale yellow, base of segment one weakly infuscated, segment 4 a strongly contrasting dark brown. Fore femora and distal half of middle and hind femora reddish, remainder of legs pale yellow. Posterior metapleural lobe white. Head, pronotum, and scutellum with numerous shallow, evenly separated punctures. Head and anterior pronotal lobe subshining. Posterior pronotal lobe and scutellum dull pruinose. Head dorsally with a few elongate hairs. Remainder of dorsal surface almost glabrous (minute decumbent hairs arising from punctures).

Head strongly declivent. Eyes very large, occupying almost entire lateral surface of head. Tylus extending over basal $\frac{1}{2}$ of first antennal segment. Ocelli placed much closer to eyes than to meson. Length head 0.60, width 0.70, interocular space 0.36. Pronotum relatively long and narrow, length and width subequal. Anterior pronotal lobe longer (0.50) than posterior lobe (0.40). Lateral pronotal margins very narrowly carinate and strongly sinuate; transverse impression complete and very deep; anterior lobe evenly convex. Length pronotum 0.90, width 0.90. Scutellum evenly elevated; without a strong marginal carina. Length scutellum 0.46, width 0.44. Lateral corial margins deeply and evenly concave, maximum width near apex of corium. Length claval commissure 0.16. Midline distance apex clavus-apex corium 0.60. Midline distance apex corium-apex abdomen 0.54. Labium obscured, at most reaching onto mesosternum. Antennae moderately slender, third segment somewhat clavate, fourth segment fusiform. Length antennal segments I 0.22, II 0.44, III 0.38, IV 0.44. Total body length 2.96.

Holotype.— δ : *Ivory Coast*: Adiopodoume. 29.IX–7.X.1975 (Linnavuori). In American Museum of Natural History.

This species is readily recognizable by the relatively elongate, narrow pronotum and other characters as noted in the following key.

Mizaldus sinuaticollis Linnavuori

Linnavuori 1978: 86.

This species was originally described from a female from "Equatoria: Yei-Iwatoka." I have examined a male from *Kenya*: "Limuru 3.IV.1955 (D.C. Thomas) (dead leaves)" in the C. J. Drake collection at the National Museum of Natural History (USNM) that I believe to be conspecific.

I have keyed this species out to two places in the following key because of uncertainty as to the condition of the scutellum. Linnavuori (1978) states that in *M. sinuaticollis* the scutellum is "densely punctate." I take it that this means that the scutellar punctures are large and anastomosing as they are in *M. linnavuorii*. In the Kenya specimen before me, the scutellar punctures are large and dense, but they are not anastomosing and the scutellum thus differs in this regard from *M. linnavuorii*. I have separated the species twice in the following key once on the basis of antennal length in case the scutellar punctures of the type specimen are not anastomosing and once where they would be.

The Kenya specimen also has the third and fourth antennal segments somewhat darker than the two proximal segments. It is certainly related in general habitus to *M. linnavuorii* and a series from intervening localities is very desirable.

Mizaldus nidulus Slater and Carayon

Slater and Carayon 1963: 1–4.

This species is readily recognizable by the dark third antennal segment and relatively weak sclerotization in which the hemelytral punctures are nearly concolorous with the surface of the clavus and corium.

Mizaldus nidulus was originally described from Guinea but is apparently widespread in Africa, although rare in collections. I have examined the following additional material: *Nigeria*: 1 δ Zugurma NW state XII.1974 (J. T. Medler). *South Africa*: Transvaal: 1 δ Lyttelton 29.II.1968 (J. A. & S. Slater) (UV

light). Natal; 1 ♀ Umtentweni VII.1953 (A. L. Capener). 1 ♀ Umtentweni VII.1954 (A. L. Capener). In J. A. Slater collection.

KEY TO AFRICAN SPECIES OF *MIZALDUS*

- 1. Third antennal segment dark red-brown to black, strongly contrasting with pale coloration of second antennal segment 2
- Third antennal segment pale yellowish, concolorous or nearly so, with coloration of second antennal segment 3
- 2. Fourth antennal segment pale yellow, strongly contrasting with dark third segment and concolorous with antennal segment two; claval punctures obscure, concolorous with pale ground color of hemelytra *nidulus* Slater and Carayon
- Fourth antennal segment black, concolorous with dark third antennal segment and strongly contrasting with pale second antennal segment; claval punctures dark brown, strongly contrasting with pale hemelytral ground color *linnavuorii* n. sp.
- 3. Scutellar punctures large, irregular and anastomosing *sinuaticollis* Linnavuori
- Scutellar punctures small, distinctly separated from one another and not anastomosing 4
- 4. Head less than 1¼ times as broad as long ... 5
- Head 1½ or more times as broad as long ... 6
- 5. Antennal segment two much less than 1.2 times length of segment three (15:13) *sinuaticollis* Linnavuori
- Antennal segment two more than 1.2 times length of segment three *lestoni* n. sp.
- 6. Pronotal length subequal to width of pronotum across humeral angles; a large quadrate brown macula present at level of distal end of claval commissure laterad of radial vein ... *tenuis* n. sp.
- Pronotum wider than long; hemelytra lacking a dark macula laterad of radial vein *carvalhoi* n. sp.

Fontathanus Scudder

Scudder 1963: 1233-1234.

Scudder (1963) erected the genus *Fontathanus* to include four African species. Three of these were known only from Zaire and the fourth from Zaire, Guinea, and Sierra Leone.

Scudder related *Fontathanus* to *Fontejus* Stål. However, Sweet (1967) placed the latter genus in the Udeocorini, whereas *Fontathanus* is a member of the Myodochini

and the relationship presumably was on the basis of myrmecomorphy. Scudder separated the two genera by *Fontathanus* having unarmed fore tibiae, a deeper and more anteriorly placed transverse pronotal constriction and said that "the coloration is different."

Harrington (1980) added to this diagnosis of *Fontathanus* the following: having "phallic type I," the posterior edge of the pygophore "subsharp," four or more rows of claval punctures, a V-shaped buccular juncture, double-ranked fore femoral spines, and an enclosed mesepimeron.

Only one of Scudder's species has a punctate anterior pronotal lobe and, even in this species, the punctures are said to be present only mesally and laterally. Both new species described below have completely punctate pronota. They are both strikingly myrmecomorphic with broad ant-shaped heads, as evidenced by the carinate lateral margins of the head before the eyes that seems to simulate the edges of mandibles. The color pattern viewed laterally enhances the antlike resemblance by the white of the posterior metapleural lobe being continued onto the proximal portions of the hind femora to "break up" the outline and form a pseudopedicel appearance.

Fontathanus rostratus, NEW SPECIES
(Fig. 8)

Shining jetblack above on head and pronotum. A narrow gray pruinose stripe through transverse pronotal impression. Prothorax laterally and ventrally, acetabula, and posterior metapleural lobe gray pruinose. Silvery pruinosity present as follows: scutellum (with exception of raised apex), a large basal corial patch within radial vein that extends onto adjacent area of clavus, a second patch on corium also within radial vein at level of anterior half of claval commissure. Corium variegated, a small pale yellow macula basally at lateral margins and a large yellow patch laterad of radial vein in center of corium, mesal portion of which

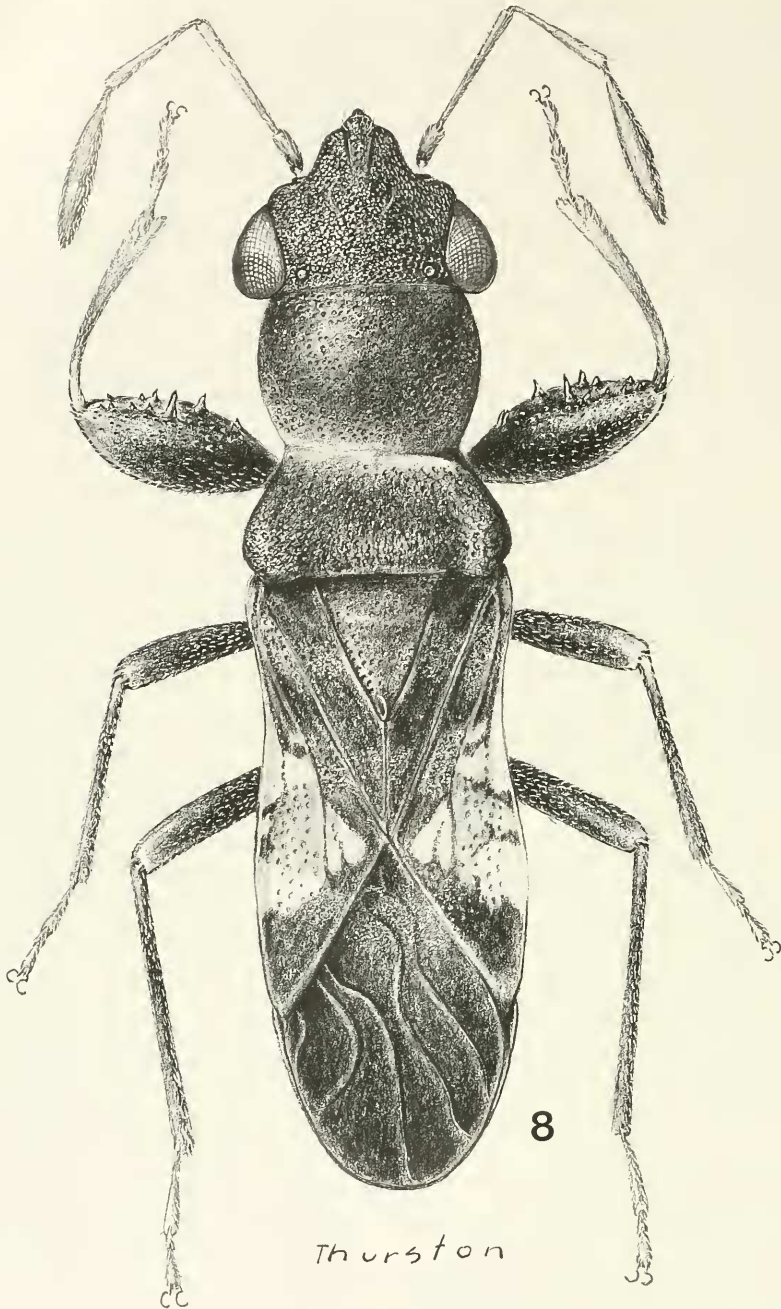


Fig. 8. *Fontathanus rostratus* n. sp. Dorsal view.

becomes bright yellowish orange and is bordered both anteriorly and posteriorly at lateral ends with a dark brown stripe or vitta. Adjacent to bright yellow area mesad of ra-

dus an additional irregular bright yellow marking, this of irregular outline, almost forming three elongate spots. Remainder of clavus and corium velvety in texture and of

an (almost black) dark red color. Membrane uniformly dark fumose, pruinose proximally within apical corial margins. Extreme postero-dorsal corner of metapleuron and subproximal band on middle and hind femora pale yellow to almost white. Extreme distal end of fore femora and entire foretibiae pale orange-yellow. Middle tibiae black at proximal ends, becoming orange-yellow distally. Hind tibiae chocolate brown. All tarsal segments and first three antennal segments pale yellow. First antennal segment infuscated with dark brown basally, fourth segment dark chocolate brown. Head and pronotum finely but conspicuously punctate over entire surface. Body surface finely shagreened, nearly glabrous but with very short fine decumbent hairs arising from punctures.

Head moderately declivent, tapered anteriorly. Head anterior to eyes produced and carinate. Eyes sessile. First antennal segment almost attaining apex of tylus. Ocelli placed far laterad, near inner corner of compound eyes. Length head 0.98, width 1.32, interocular space 0.86. Pronotum with deeply incised transverse impression. Anterior pronotal lobe rounded, ovate, longer than posterior lobe (length anterior lobe 0.86, length posterior lobe 0.58). Posterior pronotal margin nearly straight; lateral margins extremely deeply sinuate. Length pronotum 1.48, width 1.68. Scutellum with a very slight median elevation, posterior end sharply carinate. Length scutellum 0.80, width 0.64. Length claval commissure 0.50. Corium with lateral margins strongly sinuate, narrowest at level of distal portion of scutellum, slightly explanate posterior to this area and very slightly recurved. Midline distance apex clavus-apex corium 0.96. Midline distance apex corium-apex membrane 0.98. Abdomen strongly constricted basally. Metathoracic scent gland auricle elliptical, short. Evaporative area rugulose, covering almost entire anterior metapleural lobe. Fore femora strongly incrassate, armed below with 2 rows of conspicuous sharp

spines, outer row consisting of 2 or 3 major spines with 3 small spines distad of outer large spine; inner row near middle with one extremely large spine and 4 distal small spines. Foretibiae somewhat curved. Labium elongate, reaching third abdominal sternum. First labial segment exceeding base of head. Length labial segments I 0.90, II 0.90, III 0.78, IV 0.62. Antennae slender, segments two and three slightly enlarged near distal ends, fourth segment strongly fusiform. Length antennal segments I 0.28, II 0.68, III 0.62, IV 0.94. Total body length 5.0.

Holotype.—♀: *Nigeria*: Lagos, Olatunde Ayoola Av. 6.III.1975 (Abdul Hamid) (light trap). In American Museum of Natural History.

Paratypes.—*Nigeria*: 1 ♂: same data as holotype. 1 ♂ R. St. nr. Mbiama 4-5.VII.1973 (Linnavuori). 1 ♀ R. St. Ebubu nr. Bori 2.VII.1973 (Linnavuori). 4 ♂♂, 2 ♀♀ Lagos, Glatunda Ayoola Ave. V.1975 (A. Hamid). *Ivory Coast*: 1 ♂ Dunco (sp. ?) Forest 7.X.1973 (Linnavuori). In National Museum of Natural History (USNM), A. Hamid and J. A. Slater collections.

I have examined an additional large female from the Cameroon (Abong Mbang-Ayos 13.VI.1973 [Linnavuori]), which is either conspecific or represents a closely related species. In addition to its larger size this specimen has the pale yellow and orange-yellow markings on the hemelytra much more extensively developed so that the corium is predominately pale rather than dark. The membrane by contrast is uniformly dark and all tibiae, tarsal segments two and three, and antennal segments two, three and four are uniformly dark red-brown.

Fontethanus rostratus runs in Scudder's (1963) key to *Fontethanus punctatus* Scudder because of the distinct punctures present on the anterior pronotal lobe. It is apparently not closely related to *F. punctatus*, the latter having slightly ochraceous humeral pronotal angles, only a pale triangular sub-

apical corial spot, and has a pale area laterally on abdominal sternum five. In *F. punctatus* the labium reaches only to the hind coxæ and the anterior pronotal lobe is distinctly punctate only mesally and laterally, rather than over the entire surface.

Fontathanus ghanaensis,
NEW SPECIES

General form and color similar to *F. rostratus*. Pale areas on lateral portion of corium reduced to 3 irregular spots mesad of radial vein and 2 elongate white lateral streaks. Middle and hind femora lacking pale proximal annulations, completely black. First antennal segment black above, with red-brown coloration laterally. Body coloration, punctures and pubescence as in *F. rostratus*. Corium lacking shining silvery pruinose bars adjacent to claval suture.

Head strongly declivent, very broad, margins of head anterior to eyes strongly produced laterad and very sharply carinate. Length head 1.02, width 1.55, interocular space 1.0. Anterior pronotal lobe broadly obovate, maximum width equaling width across humeri; transverse impression extremely deep. Length pronotum 1.55 (length anterior lobe 0.78, length posterior lobe 0.75), width 1.42. Length scutellum 0.88, width 0.72. Length claval commissure 0.40. Clavus with a pruinose area occurring diagonally entirely across clavus near middle. Midline distance apex clavus-apex corium 1.02. Midline distance apex corium-apex membrane 1.12. Metathoracic scent gland auricle relatively slender, elongately elliptical, slightly bent posteriorly. Fore femora similar to *rostratus*. Labium relatively short, extending only slightly beyond mesocoxæ, first segment not attaining base of head. Length labial segments I 0.68, II 0.62, III 0.60, IV 0.50. Length antennal segments I 0.25, II 0.70, III 0.58, IV 1.0. Total body length 5.50.

Holotype.—♀: *Ghana*: Tafo 9.X.1965 (D. Leston). In American Museum of Natural History.

This species is very similar to *F. rostratus* in both form and color. It is most readily recognizable by the relatively short labium that does not reach the metacoxæ, in contrast to *F. rostratus* where the labium extends well back onto the anterior portion of the abdomen. Also in *F. ghanaensis* the head is much broader and the produced lateral margins anterior to the eye are much more produced and prominent.

Both of these species are strikingly myrmecomorphic. The corial color pattern, striking constriction between the pronotal lobes, constricted base of the abdomen, and the pruinose patches are all presumably ant mimetic adaptations.

Paromius carvalhoi, NEW SPECIES

Elongate, slender, parallel sided. Head black. Anterior pronotal lobe dark gray to nearly black; posterior lobe red-brown, becoming pale testaceous yellow on humeral angles and near posterior margin on either side of midline. Scutellum nearly uniformly red-brown, apex white. Hemelytra nearly uniformly pale testaceous yellow, with punctures strongly contrastingly dark brown; explanate margins dull white. Membrane pale fumose with veins strongly contrasting white. Abdomen red-brown. Femora varying from dark to bright red-brown. Tibiæ and first two tarsal segments yellow, third tarsal segment black. Punctuation typical for genus, very fine and obscure on anterior pronotal lobe, except collar where more prominent.

Head moderately acuminate, eyes set far from posterior margin, prominently swollen, tylus extending midway to distal end of first antennal segment, very slightly declivent. Length head 0.92, width 1.05, interocular space 0.58. Pronotum elongate, tapering, anterior lobe not strongly convex dorsally, not appearing globose; lateral margins sinuate; transverse impression complete; posterior lobe with a raised median elevation on anterior half. Length pronotum 1.58, width 1.50. Scutellum elevated

mesally, strongly sloping laterad. Length scutellum 1.15, width 0.72. Midline distance clavus-apex corium 1.80. Midline distance apex corium-apex membrane 1.45. Fore femora moderately incrassate, armed below with two rows of white, dark tipped spines with four to five spines and spinules present in each row. Labium elongate extending between mesocoxae. First segment not quite attaining base of head. Length labial segments I 1.05, II 1.05, III 0.80, IV 0.38. Antennae conventionally terete, slender. Length antennal segments I 0.52, II 1.42, III 1.18, IV 1.48. Total body length 8.00.

Holotype.—♂: *Ghana*: Tafo 1.IV.1967 (D. Leston). In American Museum of Natural History.

Paratypes.—*Ghana*: 1 ♂ Tafo 12.XII.1965 (Leston) (UV trap). 1 ♂ same except 23.I.1966. 1 ♀ same except 15.XII.1965. 1 ♀ same except 16.XI.1965. 1 ♂ Accra 1.XII.1969 (C. W. Campbell) (blacklight trap). In National Museum of Natural History (USNM) and J. A. Slater collections.

Many of the species of *Paromius* are very similar in habitus to one another. The genus is certainly in need of a revisional study. However, only three species of *Paromius* have the labium elongate i.e. extending to, or nearly to, the mesocoxae. In all other species the labium is appreciably shorter, barely extending onto the anterior portion of the mesosternum. Of the three species in which the labium is elongate, the Ethiopian species *Paromius apicatus* Stål differs from *P. carvalhoi* by being much larger, having a more elongate head, a strongly tapered pronotum, and a very much longer labium that in *P. apicatus* extends well onto the abdomen. *Paromius carvalhoi* is much more similar in general habitus to the Oriental species *Paromius piratoides* (Costa), which it closely resembles. However, the two are certainly distinct in that *P. piratoides* has a relatively shorter more strongly declivent head, a more prominently, convexly rounded, anterior

pronotal lobe, lacks the median elevation of the posterior pronotal lobe, and has many less claval punctures mesad of the cubital vein. Also in most specimens of *P. piratoides*, only the apex of the third tarsal segment is black, whereas in *P. carvalhoi* the entire third tarsal segment of all legs is black.

Actually *P. carvalhoi* may prove to be more closely related to *P. apicatus*, despite the more readily apparent morphological differences. Both of these species have an elevated mesal posterior line on the pronotum and elongate attenuated pronota and heads.

Both *Paromius paraclypeatus* Scudder (1969a) and *P. carvalhoi* have been confused in the literature with *Paromius gracilis* (Rambur). I have not seen authentic specimens of *P. gracilis* from Ghana, although it is probable that it occurs in the northern savanna. *Paromius gracilis* is an abundant species in eastern and southern Africa.

Esinerus Scudder

Scudder 1969b: 88–90.

Scudder (1969b) separated *Esinerus* from *Sinierus* Distant by the former lacking a pronotal collar, having a relatively short first antennal segment, a dull tylus, a more flattened scutellum, and with less prominently erect body hairs.

The new species described below necessitates some modifications of the generic diagnosis, because it has considerably longer hairs than does the type species of *Esinerus* (*refractarius* Scudder) and has a pronotal collar that is nearly as well developed as it is in species of *Sinierus*. The relatively flattened scutellum, short first antennal segment, and dull tylus will still separate the two genera but are questionable features for generic status. However, I believe that *Esinerus* and *Sinierus* should be retained as distinct genera, as there are three morphological characters not mentioned by Scudder that seem to be important. In species of *Esinerus* the bucculae are well developed

along the entire ventral surface of the head with a groove present between them so that the first labial segment lies immersed between the bucculae and scarcely extends out of the buccular groove. In *Sinierus* the bucculae are low, obsolete posteriorly and the first labial segment is not enclosed by the bucculae for most of its length. In *Esinerus* the compound eyes do not have a series of large conspicuous hairs protruding from them as do the species of *Sinierus*. The metathoracic scent gland auricle of species of *Sinierus* is produced well above the surrounding evaporative area and has an oval buttonlike shape, whereas in *Esinerus* the auricle is not raised above the evaporative surface and curves evenly posteriorly as a narrow lunate arc. *Esinerus* species have a longitudinal row of silvery hairs running through the center of the clavus. They are not present in species of *Sinierus*. These silvery hairs are rather obscure in *E. refractarius*, but are very conspicuous in *E. humidus*.

My recent (Slater 1993) key to the African genera of Drymini is inaccurate. Couplet 1 of that key separates the genera on the basis of elongate hairs on the dorsal surface. Both *Esinerus* and *Sinierus* have numerous upstanding hairs present but are keyed to the half of the couplet where such hairs are lacking. It is true that the vestiture of these genera is much less elongate and upstanding than in the genera keyed that way, but anyone using the key would surely be misled by this couplet. Also couplet 3 states that the apical corial margin of *Esinerus* must be deeply concave. It is true that *Esinerus* species do have a weakly concave area near the base of the apical corial margin, but this is easily overlooked and certainly is not "deeply concave" in the sense that it is used in *Mizaldus*. The Slater (1993) key will work much better if *Sinierus* Distant (1901) and *Esinerus* are carried to couplet 2 where they may readily be separated from *Parastilboris* Carayon (1964) and *Psilomydrus* Scudder (1969b), the other two genera with

elongate dorsal hairs, by having the dorsal body surface pruinose rather than shining or subshining.

Esinerus humidus, NEW SPECIES

Head uniformly gray, shading to dark gray-brown on anterior pronotal lobe and basal third of scutellum. Posterior pronotal lobe, posterior two-thirds of scutellum and distal half of corium bright red-brown. Clavus, anterior half of corium, a large macula on membrane adjacent to apex of corium and an elongate macula distally in middle of membrane yellow. Remainder of membrane black. Legs pale testaceous. Antennae uniformly dark brown. Head and anterior pronotal lobe clothed with conspicuous velvety pruinosity, remainder of body surface also pruinose but less conspicuously so. Dorsal surface thickly clothed with upright, or semidecumbent, yellowish hairs. Anterior and posterior pronotal lobes, scutellum and hemelytra densely and finely punctate.

Head slightly declivent, tylus greatly exceeding juga, reaching midway to distal end of first antennal segment. Eyes set slightly away from antero-lateral pronotal angles. Length head 0.32, width 0.60, interocular space 0.40. Pronotum with a distinct anterior collar, lateral margins deeply sinuate and obtusely carinate; posterior margin straight or very slightly concave before scutellum; transverse pronotal impression obsolete mesally; calli low and faintly differentiated from remainder of pronotal disc. Length pronotum 0.52, width 0.98. Scutellum somewhat impressed basally, flat over most of surface, lacking a median elevation. Length scutellum 0.52, width 0.55. Length claval commissure 0.20. Corium with lateral margins somewhat sinuate, narrowest at level of distal third of scutellum; apical corial margin slightly concave near inner end. Midline distance apex clavus-apex corium 0.58. Midline distance apex corium-apex membrane 0.52. Metathoracic scent gland auricle appearing to be bilobed (a conventional posteriorly curving lobe present,

but with also an ovoid raised anterior buttonlike lobe nearly reaching anterior margin of metapleuron). Evaporative area small, not extending dorsally to middle of metapleuron, its dorsal margin truncate but rounded posteriorly. Metapleuron completely dull, covered with short pruinose hairs in addition to the elongate upright hairs. Labium extending to mesocoxae. Length labial segments I 0.30, II 0.28, III 0.25, IV obscured. Antennae relatively slender, second segment terete, segments three and four fusiform. Length antennal segments I 0.25, II 0.50, III 0.38, IV 0.35. Total body length 2.56.

Holotype.—♂: *Ghana*: Eastern region forest reserve, Nkwanda 28.X.1967 (D. Leston). In American Museum of Natural History.

Paratype.—[no abdomen]. *Ghana*: Tafo 17.X.1965 (D. Leston). In J. A. Slater collection.

Esinerus humidus is readily separable from *E. refractorius* in being considerably more elongate and slender and having a distinct anterior pronotal collar, with much more elongate upstanding hairs, lacking a white fourth antennal segment, with obtuse lateral pronotal margins (in contrast to *E. refractorius* where the margins are narrowly but sharply carinate), and in having a much longer, and relatively more slender, second antennal segment.

The presence of three large pale spots on the membrane of the forewing in this species also occurs on many species of forest rhyparochromines from West Africa. Whether this is a defective color marking for species living on the forest floor should certainly be investigated.

The biology of *E. humidus* is unknown. Our collecting party (Schuh, J. & S. Slater, Sweet) took many specimens of *E. refractorius* in South Africa feeding on the fallen seeds of *Ficus sycamorus* L.

I have examined specimens from the Cameroon, which probably represent an undescribed species. These specimens have a

pale fourth antennal segment, lack the large pale spots on the membrane of the forewing, have the metapleuron subshining with elongate hairs present, and the middle of the abdominal sternum shining.

ACKNOWLEDGMENTS

I am especially indebted to the following individuals who through their assiduous collecting have made serious study of the West African lygaeid fauna possible: Dr. Abdul Hamid who brought together a large amount of Nigerian material from the coastal area around Lagos and from the interior savanna. The late Dennis Leston who collected carefully in central Ghana and who first stimulated my serious interest in this fauna; Dr. Rauno Linnavuori whose meticulous collecting through West Africa resulted in the discovery of a rich fauna much of which was previously unknown. Dr. John Medler who collected for years in Nigeria and made his material available to me.

I am also indebted to Mr. A. L. Capener for the gift of many species from South Africa; to Mr. Steven Thurston (formerly U. of Connecticut) for producing the dorsal view illustrations; to Dr. Roy Danielsson (Lund University) for making material from the Cameroons and Gambia available for study; to Dr. R. C. Froeschner of the National Museum of Natural History (USNM) and Dr. Randall T. Schuh (American Museum of Natural History) for the loan of specimens; to the Plant Protection Institute Pretoria and especially the late Dr. W. G. H. Coaton for making facilities available, and to Dr. Schuh and my son Samuel Slater for much assistance in the field in South Africa.

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